

REMARKS

The applicant thanks the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this Reply.

Status of the Claims

Claims 1-10 are pending in the application and stand rejected.

Rejection Under 35 U.S.C. § 102(e) Over Nagakubo And Under 35 U.S.C. § 103(a) Over Nagakubo And Mashino

Claims 1-5, 7, 9 and 10 are rejected under 35 U.S.C. § 102(e) as being anticipated by Nagakubo (U.S. Patent 6,219,117 B1). Claims 6 and 8 are rejected under 35 U.S.C. §103(a) as being obvious over Nagakubo (as applied to claims 1-5, 7, 9 and 10) in view of Mashino (U.S. Patent 5,886,759). Applicant traverses.

The Present Invention and its Advantages

The present invention pertains to a back light for a liquid crystal device that utilizes a novel reflector that includes colorless ink containing a light scattering agent. Independent claim 1 of the invention recites a reflector where "the reflector includes a printing portion made of colorless ink containing a light scattering agent."

Similarly, independent claim 3 contains the limitation: “the reflector includes a printing portion made of colorless ink containing a light scattering agent.”

That is, independent claims 1 and 3 of the invention recites “colorless ink containing a **light scattering agent**.”

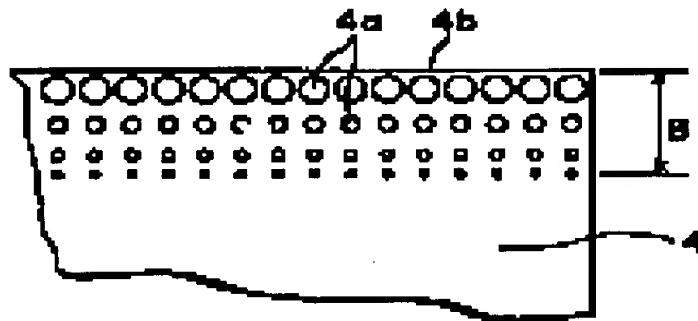
Distinctions of the Invention Over Nagakubo and Taniguchi

Distinctions of the invention over Nagakubo and Taniguchi have been placed before the Examiner. Nagakubo fails to disclose or suggest “a printing portion made of colorless ink containing a light scattering agent.” See claims 1 and 3 of the invention.

In his Response to Arguments at page 4 of the Office Action the Examiner states:

The Examiner disagrees with the Applicant’s remarks because, as a part of the diffusing sheet 4, the printing portion 4a is made of a white material, which not only transmits a part of light from the backlight source but also makes irregular reflection the remaining light from the backlight source in the light guide plate (column 7, lines 22-35). Accordingly the printing portion 4a also has a scattering function.

FIG. 3



*Figure 3 of
Nagakubo*

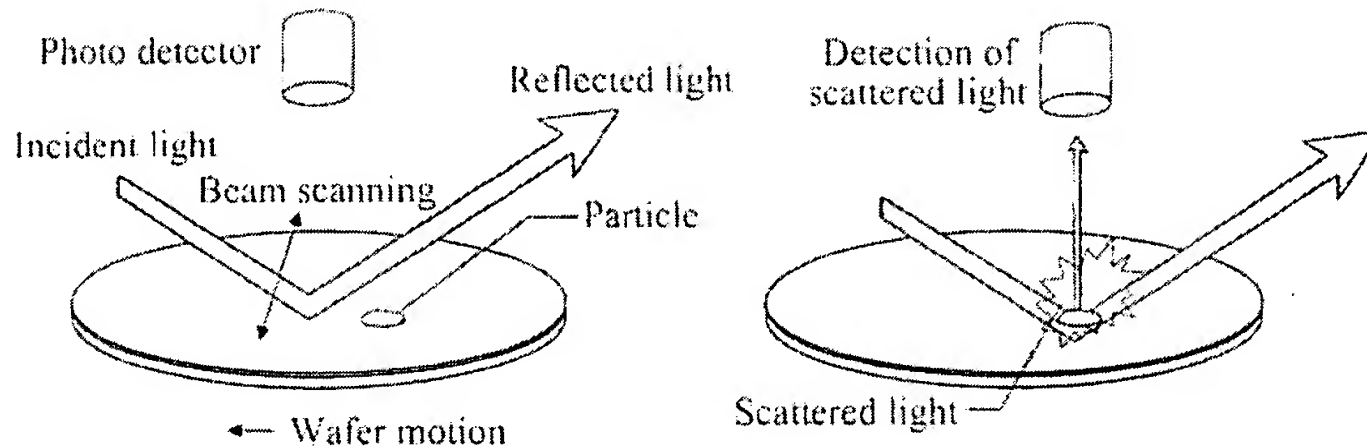
Nagakubo at column 7, lines 22-34, does have the following disclosure:

As shown in FIG. 3, since the diffusion plate 4 has the light quantity control portion 4a formed on the one surface thereof which is not subjected to the glaring prevention on the end 4b side located near to the backlight source 8, the light quantity control portion 4a being formed by print or the like to a dot pattern which is **composed of a white material having a light transmitting property to a certain extent**, a part of the light from the backlight source 8 passes through the light quantity control portion 4a and emerges to the lens sheets 3 on the light quantity control portion 4a and the remaining light reflects at the light quantity control portion 4a and makes **irregular reflection** in the light transmission member 5. (emphases added)

However, the reflection property described in Nagakubo is fundamentally different than the light scattering material of the invention.

The difference between reflection and light scattering is well known to those having skill in the art. This difference is illustrated, for example, in Figure 7.18 at

page 164 of Semiconductor Manufacturing Technology, by M. Querk and J. Serda (Prentice hall, 2001), which is reproduced below.



As shown in the above figure, light scattering is a phenomenon that is not identical to either incident or reflected light. The intensity of light scattering is instead measure at an angle θ from the beam. The intensity of the light scattering depends on the nature of the reflective surface or the concentration of particulates in the light beam. Light scattering is light diffusion that has been typically described, for example by the Broersma equation $D = (kt/6\pi nb^2)G(\rho)$ (S. Broersma, Rotational diffusion constant of a cylindrical particle., J. Chem. Phys., 32: 1626-1635, 1960).

Further, in his Response to Arguments, the Examiner turns to *Merriam Webster's Collegiate Dictionary* in an attempt to redefine the subject matter of Nagakubo to suggest the present invention:

Moreover, according to Merriam Webster's Collegiate Dictionary, Tenth Edition, "white is defined as "free from color" (page 1348) and "colorless" is defined as "lacking color" (page 227). Therefore, a "colorless ink" is the same as an "ink having a white material."

However, the *American Heritage Dictionary of the English Language* on Yahoo®.com clearly defines “white” as a color: “The achromatic color of maximum lightness; the color of objects that reflect nearly all light of all visible wavelengths...”

As a result, “white” is a color and “colorless” means “transparent”. Nagakubo therefore fails to disclose or suggest the invention for these additional reasons as well. For the Examiner’s convenience, a copy of the *American Heritage Dictionary of the English Language* definition is attached.

The “irregular reflection” of the “white material” of Nagakubo therefore fails to disclose or suggest the light scattering caused by the “light scattering material” of the invention. As a result Nagakubo fails to anticipate the invention and fails to suggest the invention sufficient to allege *prima facie* obviousness over independent claims 1 or 3. The dots of Mashino fail to address the deficiencies of Nagakubo in suggesting the invention. Claims dependent upon claims 1 and 3 are patentable for at least the above reasons.

These rejections are accordingly overcome and withdrawal thereof is respectfully requested.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned

below, to conduct an interview in an effort to expedite prosecution in connection with the present application.


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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Search Dictionary

Enter a word or phrase to look up (e.g., **abacus**):  **Bartleby.com**[Email this definition to a friend](#)< [Whitby](#)[White, Andrew Dickson](#) >**white**PRONUNCIATION: [AUDIO: hwīt](#), [AUDIO: wīt](#) [KEY](#)

- NOUN: 1. The achromatic color of maximum lightness; the color of objects that reflect nearly all light of all visible wavelengths; the complement or antagonist of black, the other extreme of the neutral gray series. Although typically a response to maximum stimulation of the retina, the perception of white appears always to depend on contrast.
2. The white or nearly white part, as: **a.** The albumen of an egg. **b.** The white part of an eyeball. **c.** A blank unprinted area, as of an advertisement.
3. One that is white or nearly white, as: **a. whites** White trousers or a white outfit of a special nature: *tennis whites*. **b. whites** The white dress uniform of the U.S. Navy or Coast Guard. **c.** A white wine. **d.** A white pigment. **e.** A white breed, species, or variety of animal. **f. also White** A member of a racial group of people having light skin coloration, especially one of European origin. See Usage Note at **black**. **g.** Products of a white color, such as flour, salt, and sugar. Often used in the plural.

Word of the Day

obdurate

Definition: (adjective)
unwilling to change;
stubborn, inflexible

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ADVERT



**Make
Carp
Little
Rewa**

**Earn
Reba
All Ga
Purc
for the fir
the accou**

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4. *Games* **a.** The white or light-colored pieces, as in chess. **b.** The player using these pieces.

5**a.** The outermost ring of an archery target. **b.** A hit in this ring.

6. **whites** *Pathology* Leukorrhea.

7. A politically ultraconservative or reactionary person.

ADJECTIVE: Inflected forms: **whit·er, whit·est**

1. Being of the color white; devoid of hue, as new snow.

2. Approaching the color white, as: **a.** Weakly colored; almost colorless; pale: *white wine*. **b.** Pale gray; silvery and lustrous: *white hair*. **c.** Bloodless; blanched.

3. Light or whitish in color or having light or whitish parts. Used with animal and plant names.

4. also **White** Of or belonging to a racial group having light skin coloration, especially one of European origin: *voting patterns within the white population*.

5. Not written or printed on; blank.

6. Unsullied; pure.

7. Habited in white: *white nuns*.

8. Accompanied by or mantled with snow: *a white Christmas*.

9**a.** Incandescent: *white flames*. **b.**

Intensely heated; impassioned: *white with fury*.

10. Ultraconservative or reactionary.

11. With milk added. Used of tea or coffee.

TRANSITIVE Inflected forms: **whit·ed, whit·ing, whites**

VERB: 1. *Printing* To create or leave blank spaces in (printed or illustrated matter). Often used with *out*.

2. *Archaic* **a.** To whiten; whitewash. **b.** To blanch.

ETYMOLOGY: Middle English, from Old English *hwīt*.
See **kweit-** in Appendix I.

OTHER FORMS: **white'ness** —NOUN

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The American Heritage® Dictionary of the English Language, Fourth Edition.

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